

# Dr Riffat Mahmood

**Associate Professor of Geography and Environment**  
**Specialization in Human-Environment Interactions and Qualitative GIS**

## PERSONAL INFORMATION

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## BIOGRAPHY

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I've **8 years of teaching experience** and engaged in various national and international organizations doing research related to my specialized field. I did **PhD in Cartography and Geographic Information Science (Research focus: Coast and Climate Change)** at the Aerospace Information Research Institute (AIR) of Chinese Academy of Sciences (CAS). I did my Masters and Bachelor in **Geography and Environment with special focus on Human Geography** from University of Dhaka, Bangladesh.

People and Environment being the centre of my research focus, I joined **IUCN (International Union for Conservation of Nature) in 2015** and facilitated a research component related to the participatory approach of coastal community in climate change induced disaster mitigation. The study of space, as the key question of geography, I studied the change in spatial patterns by anthropogenic processes through engaging myself in several **research projects e.g. Migration and Urbanization of Bangladesh funded by UNFPA**.

Based on the academic and research excellence, I was **awarded “CAS-TWAS President’s Fellowship” funded by The World Academy of Sciences (TWAS), Italy, and UNESCO**. During my PhD, I formulated **Climate Change Resilience of Place (C-CROP)** model based on the principles of climate change vulnerabilities and resilience of local community with an approach to the incorporation of **nature-based solution (NBS)**. To formulate C-CROP model, I thoroughly reviewed the discourse and related narratives on **disaster management, climate change induced vulnerabilities, loss, and damage (L&D), adaptation, and resilience**. This theoretical review gave me deeper understanding on the need of vulnerable communities and barriers to the adaptation practices of local community and related Loss and Damage (L&D) of socio-ecological system especially in the Third World context. I have published **around 19 scientific articles** in my teaching and research career. My current engagements as an academia and researcher integrate and incorporate theoretical knowledge of human-environment interaction and climate actions (SDG 13) with various powerful tools and techniques to support policy recommendation and advocacy.

## EDUCATION

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- 2018- 2022    **PhD in Cartography and Geographic Information Science**  
Research Focus: Coast and Climate Change
- Key Laboratory of Digital Earth Science, Aerospace Information Research Institute (AIR), Chinese Academy of Sciences (CAS), China
  - College of Resources and Environmental Studies, University of Chinese Academy of Sciences (UCAS), China
- 2012-2013    **MS in Human Geography and Environment**  
Department of Geography and Environment, University of Dhaka, Bangladesh  
Result: 3.87 out of 4.00  
Position: 1<sup>st</sup> position (in Human Geography and Environment Stream)
- 2009-2012    **BSc in Geography and Environment**  
Department of Geography and Environment, University of Dhaka, Bangladesh  
Result: 3.71 out of 4.00  
Position: 3<sup>rd</sup> position

HSC (2008) and SSC (2006) from Viqarunnisa Noon School and College, Dhaka Board with GPA 5.00

## WORKING EXPERIENCE

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- Mar, 2024- Present    **Associate Professor**  
Department of Geography and Environment, Faculty of Life and Earth Sciences, Jagannath University, Dhaka, Bangladesh
- Dec, 2020- Feb, 2024    **Assistant Professor**  
Department of Geography and Environment, Faculty of Life and Earth Sciences, Jagannath University, Dhaka, Bangladesh
- Jul, 2016- Dec, 2020    **Lecturer**  
Department of Geography and Environment, Faculty of Life and Earth Sciences, Jagannath University, Dhaka, Bangladesh
- Feb, 2016-Jun, 2016    **Research Assistant (to Dr. AQM Mahbub)**  
Study on Migration and Urbanization of Bangladesh, United Nations Population Fund (UNFPA), Dhaka, Bangladesh
- Nov, 2015-Jan, 2016    **Data and GIS Intern**  
International Union for Conservation of Nature (IUCN), Dhaka, Bangladesh

## PRESENT PROFESSIONAL INVOLVEMENT

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- **Associate Professor**  
Department of Geography and Environment, Faculty of Life and Earth Sciences, Jagannath University, Dhaka, Bangladesh
- **Deputy Director**  
Center for Climate, Society and Environment, Jagannath University, Bangladesh
- **Secretary: Research Development and Collaboration**  
DBAR-Data Working Group, Digital Belt and Road Initiatives, China
- **Fellow**  
The World Academy of Sciences (TWAS), Italy

## RESEARCH

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Specific research interests but is not limited to:

- Climate action
- Multi-hazard modelling
- Loss and damage (L&D)
- Nature base solution (NBS)
- Human-environment Interactions
- Coast and People
- Urbanization and Migration

## PUBLICATIONS

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### Journal Paper

- Hasan, M., Hassan, L., Mamun, A.A., Kamal., A. H. M., Idris, M. H., Hoque, M. Z., **Mahmood, R.**, Alam, M.N., Ali, A. (2024). Human intervention caused massive destruction of the second largest mangrove forest, Chakaria Sundarbans, Bangladesh, *Environmental Science and Pollution Research*. <https://doi.org/10.1007/s11356-024-32792-2>
- Zuo, J., Zhang, L., Chen, B., Liao, J., Hashim, M., Sutrisno, D., Hasan, M. E., **Mahmood, R.**, Sani, D. A. (2023). Assessment of coastal sustainable development along the maritime silk road using an integrated natural-economic-social (NES) ecosystem, *Heliyon*, 9(6). <https://doi.org/10.1016/j.heliyon.2023.e17440>
- **Mahmood, R.**, Zhang, L., Li, G., Roy, N. R., Rawnaq, N., Yan, M., Dong, Y., Chen, B. (2023). Geospatial Assessment of Intrinsic Resilience to the Climate Change for the Central Coast of Bangladesh, *Climate Risk Management*, 40(4):100521. <https://doi.org/10.1016/j.crm.2023.100521>
- Yang, F., Zhang, L., Chen, B., Li, K., Liao, J., **Mahmood, R.**, Hasan, M. E., Al-Mamun, M. M. A., Raza, S. A., Sutrisno, D. (2023). Long-Term Change of Coastline Length along Selected Coastal Countries of Eurasia and African Continents, *Remote Sensing*, 15(9):2344. <https://doi.org/10.3390/rs15092344>
- **Mahmood, R.**, Zhang, L., Li, G. (2023). Assessing effectiveness of nature-based solution with big earth data: 60 years mangrove plantation program in Bangladesh coast, *Ecological Processes*, 12(1). <https://doi.org/10.1186/s13717-023-00419-y>
- Yan, M., Fan, S., Zhang, L., **Mahmood, R.**, Chen, B., Dong, Y. (2022). Vegetation dynamics from Urbanization in the Coastal Cities along the Maritime Silk Road, *Land*, 11(2):164. <https://doi.org/10.3390/land11020164>
- **Mahmood, R.**, Zhang, L., Li, G., Rahman, M. K. (2021). Geo-based model of intrinsic resilience to climate change: an approach to nature-based solution, *Environment, Development and Sustainability*. <https://doi.org/10.1007/s10668-021-01925-9>
- Hasan ME., Zhang, L., **Mahmood, R.**, Guo, H., Li, G. (2021). Modeling of Forest Ecosystem Degradation Due to Anthropogenic Stress: The Case of Rohingya Influx into the Cox's Bazar–Teknaf Peninsula of Bangladesh, *Environments*, 8, 121. <https://doi.org/10.3390/environments8110121>
- Hasan, M.E., Zhang, L., Dewan, A., Guo, H., **Mahmood, R.** (2020). Spatiotemporal pattern of forest degradation and loss of ecosystem function associated with Rohingya influx: A geospatial approach, *Land Degradation and Development*, 1–18.

- **Mahmood, R.**, Ahmed, N., Zhang, L. and Li, G. (2020). Coastal vulnerability assessment of Meghna estuary of Bangladesh using geospatial techniques, *International Journal of Disaster Risk Reduction*, 42: 1-14.
- Nahar, N., Neegar, S., Uddin, MA., Sultana, S. and **Mahmood, R.** (2018). Degradation of river water quality and its effects on livelihood in Narsingdi industrial area, Bangladesh, *Rajshahi University Journal of Environmental Science*, 6: 118-127.
- **Mahmood, R.** (2017). Monitoring LULC dynamics using geospatial techniques: A case study of coastal Hatiya island of Bangladesh, *Jagannath University Journal of Life and Earth Sciences*, 3 (1): 66-74.
- Nahar, N., **Mahmood, R.** and Rahman, D. (2016). Fire hazard vulnerability issues in readymade garment industries in Mirpur zone, Dhaka, *Jagannath University Journal of Life and Earth Sciences*, 2(2):133-139.
- Roy, S. and **Mahmood, R.** (2016). Monitoring shoreline dynamics using Landsat and hydrological data: A case study of Sandwip island of Bangladesh, *The Pennsylvania Geographer*, 54(2): 20-41.

### Book Chapter

- **Mahmood, R.** and Mahbub, AQM. (2018). Building vulnerable islander resilience to natural hazard: A participatory approach. In W. Leal Filho (ed.), *Handbook of Climate Change Resilience*. Cham, Switzerland: Springer International Publishing AG, part of Springer Nature.

### Paper Proceedings

- Hasan, M. M., Hassan, M. L., Mamun, A. A., Hoque, M.Z., **Mahmood, R.**, Ali, A., Alam, M. N., Kamal, A. H. M. (2022, July 25). Human interaction caused land cover changes of Chakaria Sundarban mangrove forest in Bangladesh: a fifty-years study. *Proceedings of 1st International Postgraduate Symposium on Food Security 2022 (IPSyoFS-22)*. Paper presented at 1st International Postgraduate Symposium on Food Security 2022. Indonesia: Faculty of Fisheries and Food Science (UMT) & Institute Pertanian Bogor (IPB Indonesia).
- Rahman, M. M., Masrur, M. H., **Mahmood, R.**, Rahaman, M. A. and Bijoy, M. R. (2018, January 8-11). Disasters and forced migration: A case study on riverbank erosion and its potential impacts on rural and urban Bangladesh. *Proceedings of 4th Gobeshona Conference for Research on Climate Change in Bangladesh*. Paper Presented at the 4th Gobeshona Conference for Research on Climate Change in Bangladesh. Dhaka: Independent University.
- **Mahmood, R.** (2015, November 22). Adaptation of isolated coastal community in the context of changing climatic scenario: A case study of Sandwip island of Bangladesh. In R. Morimoto & T. Jafry (Eds.). *Paper Proceedings of Climate Change Adaptation 2015*. Paper presented at the 4th International Conference on Climate Change 2015 (pp. 24-30). Colombo, Sri Lanka: International Center for Research and Development.

### SCIENTIFIC PRESENTATIONS

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- **Mahmood, R.**, Zhang, L. and Li, G (2022, June 15-17). Assessing effectiveness of nature-based solution with big earth data: 60 years mangrove plantation program in Bangladesh coast. Paper presented at the 5th Asia-Oceania Group on Earth Observations (AOGEO) Workshop. Beijing: AOGEO.

- Zhang, L. and **Mahmood, R.** (2019, September 17-19). *Coastal research and innovation of DBAR-coast, Digital Belt and Road Initiative of China*. Paper presented at the Geomatics Scientific meeting on Spatial Planning and Disaster management. Bundung, Indonesia: Indonesia Society for Remote Sensing and Indonesian Society for Remote Sensing Congress.
- Rahman, M. M., Masrur, M. H., **Mahmood, R.**, Rahaman, M. A. and Bijoy, M. R. (2018, January 8-11). Disasters and forced migration: A case study on riverbank erosion and its potential impacts on rural and urban Bangladesh. *Proceedings of 4th Gobeshona Conference for Research on Climate Change in Bangladesh*. Paper Presented at the 4th Gobeshona Conference for Research on Climate Change in Bangladesh. Dhaka: Independent University.
- **Mahmood, R.** (2016, January 8). Land erosion in Meghna estuary: Problems and prospect. Paper presented at the Special Conference on Coastal and Marine Environment of Bangladesh (SCCCMEB). Dhaka: Bangladesh Poribesh Andolon (BAPA) and Bangladesh Environment Network (BEN).
- **Mahmood, R.** (2015, November 22). Adaptation of isolated coastal community in the context of changing climatic scenario: A case study of Sandwip island of Bangladesh. In R. Morimoto & T. Jafray (Eds.), *Paper Proceedings of Climate Change Adaptation 2015*. Paper presented at the 4th International Conference on Climate Change 2015 (pp. 24-30). Colombo, Sri Lanka: International Centre for Research and Development.

## CROSS BOUNDARY RESEARCH EXPERIENCES

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<b>United Kingdom</b>	Center for Sustainable, Healthy and Learning Cities and Neighbourhoods, UK, as a research consultant.
<b>Australia</b>	<i>Emeritus Professor Gavin Jones</i> , Australian National University, Canberra and Murdoch University, Perth; in a project titled "Urbanization and Migration in Bangladesh" funded by UNFPA.
<b>China</b>	DBAR-coast working group and DBAR-data working group, Digital Belt and Road, Belt and Road Initiative by China in several research projects.
<b>Indonesia</b>	Indonesian Society for Remote Sensing; in a research project "Application of Geospatial Science in Spatio Temporal Monitoring and Modelling of Mangrove Ecosystem: A case study of Muara Angke Mangrove Forest in Indonesia"

## SKILLS AND ACHIVEMENTS

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### Language Skill

- Mother tongue: Bengali
- Other Language: English (Proficient user), Chinese (Basic user)

### Professional Skill

Being a geographer, I have pursued multi-disciplinary research focuses on following skills.

- Qualitative Geographic Information System (Qual-GIS)
- Satellite-based Earth Observation (EO)
- Multi Criteria Evaluation (MCE) techniques
- Participatory Action Research (PAR)
- Systematic review and meta analysis

## **Awards**

- CAS-TWAS President's Fellowship Award, 2018 Chinese Academy of Sciences (CAS), China; The World Academy of Sciences (TWAS), Italy and UNESCO
- National Science and Technology (NST) Fellowship Award, 2015, Ministry of Science and Technology, Government of Bangladesh, Bangladesh.
- Merit Scholarship of Faculty of Earth and Environmental Sciences, University of Dhaka, Bangladesh

## **Co-operation Partnership and Membership**

- International Co-operation Partner, Asia Oceania Group on Earth Observations (AOGEO) of Group on Earth Observations (GEO), Geneva, Switzerland
- International Co-operation Partner, National Earth Observation Data Center of China (NODA), China
- International Co-operation Partner, DBAR-coast working group, Digital Belt and Road (DBAR), Belt and Road Initiative, China
- International Co-operation Partner, China National Space Administration (CNSA), China
- Member, Asia Pacific Academic Network on Disaster Displacement (APANDDD), Raoul Wallenberg Institute of Human Rights and Humanitarian Law, Sweden
- Member, Asiatic Society of Bangladesh, Bangladesh
- Member, Bangladesh Poribesh Andolon (BAPA), Bangladesh
- Member, Bangladesh Geographical Society (BGS), Bangladesh